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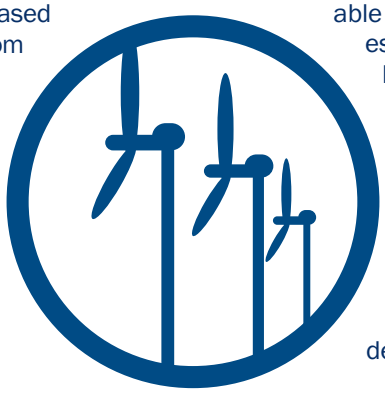
Wind Power

U.S. Environmental Protection Agency • May 2002 www.epa.gov/ne

Wind Power in Connecticut

Wind resources can be used with both large wind turbines for utility applications and with small wind turbines for on-site generation. As a renewable resource, wind is classified according to wind power classes, which are based on typical wind speeds. These classes range from class 1 (the lowest) to class 7 (the highest). In general, wind power class 3 or higher can be useful for generating wind power with large (utility-scale) turbines, and small turbines can be used at any wind speed. Class 4 and above are considered good resources.



WIND POWER CLASS	50m (164 ft) WIND POWER* W/m^2	SPEED m/s †	SPEED mph
1	0	0	0
2	200	5.6	12.5
3	300	6.4	14.3
4	400	7.0	15.7
5	500	7.5	16.8
6	600	8.0	17.9
7	800	8.8	19.7
	2000	11.9	26.6

RIDGE CREST ESTIMATES (LOCAL RELIEF > 1000 FT)
* Wind Power Density - watts per square meter
† meters per second

According to analysis conducted by the US Department of Energy, Connecticut has good wind resources in parts of the state. The primary areas of good onshore wind energy resources (class 4 through 7) are the exposed hilltops, ridge crests, and mountain summits in the northwest part of the state.

Onshore Potential

An extensive area of New England, including much of Connecticut, has annual average wind power of class 3 or higher on exposed locations. Most of the hilltops and mountain tops in Connecticut have class 3 or 4 wind power, less than that found in the larger mountain ranges in the northern New England states. This wind power can increase to class 6 and 7 in the winter.

Though siting decisions regarding individual wind facilities are up to state and local officials, DOE has estimated that approximately 6% of Connecticut's land area may be suitable for wind power development. Where did these estimates come from? First, they excluded the land which has a wind power class of 2 or less-the nonusable resources. Then, they excluded land with urban development or land that is environmentally sensitive. Assuming there may be other land-use conflicts as well, they subtracted out 50% of forest land, 30% of farmland, and 10% of rangeland, resulting in about 6% of the state of Connecticut having good winds and being available for development.

According to these estimates, if all of the wind energy potential was developed with utility-scale wind turbines, the power produced each year could equal 6,000,000 megawatt-hours - or 22% of the entire state's electricity consumption.

Coastal and Offshore Potential

The annual average wind power for exposed Atlantic coastal and offshore islands of the Northeast is primarily class 4, 5, and 6. Offshore potential tends to be higher due to a lack of local roughness features such as vegetation and buildings which can reduce the wind power potential at some land based sites. Class 4 is found immediately along the coast, while class 6 exists along the outer capes and islands such as Cape Cod and Nantucket Island. However, semi-enclosed bodies of water, such as Long Island Sound which covers coastal Connecticut, have a lower wind resource (class 3).
(see back for current state of wind power in New England)

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Current and Proposed Wind Projects in New England

Existing Wind Projects

Location	*Size (in Megawatts)*	*Number of towers*	*Facility Area (acres)*	*Height of tower (feet)*	*Length of Rotor (feet)*
Holyoke, MA	*0.25*	*1*	*< 1*	*80*	*40*
Hull, MA	*0.66*	*1*	*< 1*	*164*	*75*
Princeton, MA	*0.32*	*8*	*16*	*100*	*22*
Madawaska, ME	*0.05*	*1*	*< 1*	*100*	*25*
Orland, ME	*0.05*	*1*	*< 1*	*100*	*25*
Searsburg, VT	*6.0*	*11*	*35*	*131*	*66*

Proposed Expansion of Existing Wind Projects

Location	*Added Capacity (in Megawatts)*
Hull, MA	*0.66*
Princeton, MA	*3*
Searsburg, VT	*30-40*

Proposed Wind Projects

Location	*Size (in Megawatts)*
Hancock, MA	*13.5*
Monroe, MA	*20-30*
Nantucket Sound, MA	*420*
Nantucket Shoals, MA	*20*
Nantucket-SE, MA	*600-800*
Phillips, ME	*52*
Manchester, VT	*9*